

A map of the United States is shown within a blue circular border. The map is overlaid with a grid of small squares in green, yellow, and blue, representing data points. The text "VA HEALTH CARE ATLAS" and "FY- 2000" is centered over the map. The word "Canada" is at the top, "Mexico" is at the bottom, and "Gulf of Mexico" is at the bottom right.

VA HEALTH CARE ATLAS

FY- 2000

Diagnostic Codes Used to Define Cohort (Spinal Cord Injury)

ICD-9 code	Description
3440	QUADRIPLÉGIA (SPINAL)
34400	QUADRIPLÉGIA, UNSPECIFIED
34401	QUADRIPLÉGIA, C1-C4, COMPLETE
34402	QUADRIPLÉGIA, C1-C4, INCOMPLETE
34403	QUADRIPLÉGIA, C5-C7, COMPLETE
34404	QUADRIPLÉGIA, C5-C7, INCOMPLETE
34409	OTHER QUADRIPLÉGIA
3441	PARAPLEGIA
8060	CLOS CERV FX W CORD INJ*
80600	CLOSED FRACTURE OF C1-C4 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80601	CLOSED FRACTURE OF C1-C4 LEVEL WITH COMPLETE LESION OF CORD
80602	CLOSED FRACTURE OF C1-C4 LEVEL WITH ANTERIOR CORD SYNDROME
80603	CLOSED FRACTURE OF C1-C4 LEVEL WITH CENTRAL CORD SYNDROME
80604	CLOSED FRACTURE OF C1-C4 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJUR
80605	CLOSED FRACTURE OF C5-C7 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80606	CLOSED FRACTURE OF C5-C7 LEVEL WITH COMPLETE LESION OF CORD
80607	CLOSED FRACTURE OF C5-C7 LEVEL WITH ANTERIOR CORD SYNDROME
80608	CLOSED FRACTURE OF C5-C7 LEVEL WITH CENTRAL CORD SYNDROME
80609	CLOSED FRACTURE OF C5-C7 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJUR
8061	OPEN CERV FX W CORD INJ*
80610	OPEN FRACTURE OF C1-C4 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80611	OPEN FRACTURE OF C1-C4 LEVEL WITH COMPLETE LESION OF CORD
80612	OPEN FRACTURE OF C1-C4 LEVEL WITH ANTERIOR CORD SYNDROME
80613	OPEN FRACTURE OF C1-C4 LEVEL WITH CENTRAL CORD SYNDROME
80614	OPEN FRACTURE OF C1-C4 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
80615	OPEN FRACTURE OF C5-C7 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80616	OPEN FRACTURE OF C5-C7 LEVEL WITH COMPLETE LESION OF CORD
80617	OPEN FRACTURE OF C5-C7 LEVEL WITH ANTERIOR CORD SYNDROME
80618	OPEN FRACTURE OF C5-C7 LEVEL WITH CENTRAL CORD SYNDROME
80619	OPEN FRACTURE OF C5-C7 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
8062	CL DORSAL FX W CORD INJ*

Spinal Cord Injury

ICD-9 code	Description
80620	CLOSED FRACTURE OF T1-T6 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80621	CLOSED FRACTURE OF T1-T6 LEVEL WITH COMPLETE LESION OF CORD
80622	CLOSED FRACTURE OF T1-T6 LEVEL WITH ANTERIOR CORD SYNDROME
80623	CLOSED FRACTURE OF T1-T6 LEVEL WITH CENTRAL CORD SYNDROME
80624	CLOSED FRACTURE OF T1-T6 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJUR
80625	CLOSED FRACTURE OF T7-T12 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80626	CLOSED FRACTURE OF T7-T12 LEVEL WITH COMPLETE LESION OF CORD
80627	CLOSED FRACTURE OF T7-T12 LEVEL WITH ANTERIOR CORD SYNDROME
80628	CLOSED FRACTURE OF T7-T12 LEVEL WITH CENTRAL CORD SYNDROME
80629	CLOSED FRACTURE OF T7-T12 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJU
8063	OPN DORSAL FX W CORD INJ*
80630	OPEN FRACTURE OF T1-T6 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80631	OPEN FRACTURE OF T1-T6 LEVEL WITH COMPLETE LESION OF CORD
80632	OPEN FRACTURE OF T1-T6 LEVEL WITH ANTERIOR CORD SYNDROME
80633	OPEN FRACTURE OF T1-T6 LEVEL WITH CENTRAL CORD SYNDROME
80634	OPEN FRACTURE OF T1-T6 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
80635	OPEN FRACTURE OF T7-T12 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY
80636	OPEN FRACTURE OF T7-T12 LEVEL WITH COMPLETE LESION OF CORD
80637	OPEN FRACTURE OF T7-T12 LEVEL WITH ANTERIOR CORD SYNDROME
80638	OPEN FRACTURE OF T7-T12 LEVEL WITH CENTRAL CORD SYNDROME
80639	OPEN FRACTURE OF T7-T12 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
8064	CLOSED FRACTURE OF LUMBAR SPINE WITH SPINAL CORD INJURY
8065	OPEN FRACTURE OF LUMBAR SPINE WITH SPINAL CORD INJURY
8066	FX SACRUM-CL W CORD INJ*
80660	CLOSED FRACTURE OF SACRUM AND COCCYX WITH UNSPECIFIED SPINAL CORD INJ
80661	CLOSED FRACTURE OF SACRUM AND COCCYX WITH COMPLETE CAUDA EQUINA LESIO
80662	CLOSED FRACTURE OF SACRUM AND COCCYX WITH OTHER CAUDA EQUINA INJURY
80669	CLOSED FRACTURE OF SACRUM AND COCCYX WITH OTHER SPINAL CORD INJURY
8067	FX SACRUM-OPN W CORD INJ*
80670	OPEN FRACTURE OF SACRUM AND COCCYX WITH UNSPECIFIED SPINAL CORD INJUR
80671	OPEN FRACTURE OF SACRUM AND COCCYX WITH COMPLETE CAUDA EQUINA LESION
80672	OPEN FRACTURE OF SACRUM AND COCCYX WITH OTHER CAUDA EQUINA INJURY
80679	OPEN FRACTURE OF SACRUM AND COCCYX WITH OTHER SPINAL CORD INJURY
8068	CLOSED FRACTURE OF UNSPECIFIED VERTEBRA WITH SPINAL CORD INJURY

ICD-9 Code	Description
8069	OPEN FRACTURE OF UNSPECIFIED VERTEBRA WITH SPINAL CORD INJURY
9072	LATE EFFECT OF SPINAL CORD INJURY
9520	CERVICAL SPINAL CORD INJ*
95200	C1-C4 LEVEL SPINAL CORD INJURY, UNSPECIFIED
95201	C1-C4 LEVEL WITH COMPLETE LESION OF SPINAL CORD
95202	C1-C4 LEVEL WITH ANTERIOR CORD SYNDROME
95203	C1-C4 LEVEL WITH CENTRAL CORD SYNDROME
95204	C1-C4 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
95205	C5-C7 LEVEL SPINAL CORD INJURY, UNSPECIFIED
95206	C5-C7 LEVEL WITH COMPLETE LESION OF SPINAL CORD
95207	C5-C7 LEVEL WITH ANTERIOR CORD SYNDROME
95208	C5-C7 LEVEL WITH CENTRAL CORD SYNDROME
95209	C5-C7 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
9521	DORSAL SPINAL CORD INJUR*
95210	T1-T6 LEVEL SPINAL CORD INJURY, UNSPECIFIED
95211	T1-T6 LEVEL WITH COMPLETE LESION OF SPINAL CORD
95212	T1-T6 LEVEL WITH ANTERIOR CORD SYNDROME
95213	T1-T6 LEVEL WITH CENTRAL CORD SYNDROME
95214	T1-T6 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
95215	T7-T12 LEVEL SPINAL CORD INJURY, UNSPECIFIED
95216	T7-T12 LEVEL WITH COMPLETE LESION OF SPINAL CORD
95217	T7-T12 LEVEL WITH ANTERIOR CORD SYNDROME
95218	T7-T12 LEVEL WITH CENTRAL CORD SYNDROME
95219	T7-T12 LEVEL WITH OTHER SPECIFIED SPINAL CORD INJURY
9522	LUMBAR SPINAL CORD INJURY WITHOUT SPINAL BONE INJURY
9523	SACRAL SPINAL CORD INJURY WITHOUT SPINAL BONE INJURY
9524	CAUDA EQUINA SPINAL CORD INJURY WITHOUT SPINAL BONE INJURY
9528	MULTIPLE SITES OF SPINAL CORD INJURY WITHOUT SPINAL BONE INJURY
9529	UNSPECIFIED SITE OF SPINAL CORD INJURY WITHOUT SPINAL BONE INJURY

Highlights

Table 13.1

National Overview

In FY-2000, the VHA had 19,238 patients with either a primary or secondary diagnostic code of one or more of the Spinal Cord Injury (SCI) codes listed above. This number represents approximately one half of a percent (.58%) of the total patient population during the fiscal year (Table 13.1). As with most patients seen in the VHA, the majority of patients were male (97.25%), with only 3275% female.

About one-third of the SCI patients were between the ages of 45 and 54 (30.47%). The rest of the age groups are distributed as follows: 19.75% under the age of 45, 18.94% between the ages of 55 and 64, 19.54% between the ages of 65 and 74, and 11.3% 75 years of age or older.

Slightly less than half (48.64%) of the SCI were married. The “Means Test” categories show that 51.23% were Priority 1 - 3 (service-connected injured) veterans and 41.19% were Priority 5 (low income).

VISN Overview

The volume of patients with SCI ranged from a high of 1,959 individuals in Sunshine network (VISN 8) to a low of 275 in the Central Plain network (VISN 14). Networks with over 1,500 SCI patients, in addition to the Sunshine network, are: South Central (1,724) and Desert Pacific (1,926). The percentage of the total number of SCI patients who are in the service-connected injury categories ranges from a low of 45.58% in the Heartland network (VISN 15) to a high of 59.44% in the Heart of Texas network (VISN 17).

Table 13.2

This table compares utilization by the SCI **primary** diagnosis group for all conditions with utilization by all VA patients for all conditions. Note that for this table, only patients who had a primary diagnosis of SCI were selected. If a patient had SCI as a secondary diagnosis only, he/she is not included. Further, for our primary diagnosis SCI group we examined all utilization that occurred during the fiscal year, both SCI-specific and all other non-SCI related medical care obtained.

As an example of what the data show and how to interpret the findings, examine the Desert Pacific network (VISN 22). In this particular network, less than 1% of the total patients seen at a VA facility in fiscal year 2000 had a primary diagnosis of SCI (.98%). This group of patients accounted for almost 14.19% of the total bed-days of care in VISN 22, 4.06% of total discharges in VISN 22, and 2.57% of outpatient visits in VISN 22 made by all patients of VA health care services in the network for all medical conditions.

Table 13.3

Table 13.3 is similar to Table 13.2 except that patients who only had a **secondary** diagnosis of SCI are examined rather than patients who had a primary diagnosis. This table compares utilization by the SCI secondary diagnosis group for all health conditions they had during the year (i.e., includes both SCI-specific utilization and utilization for all other non-SCI care the patient may have received) with utilization by all VISN patients for all conditions. Using the example of VISN 22, the data can be interpreted as follows: .1% of the patients in VISN 22 had at most a secondary diagnosis of SCI, but never a primary diagnosis. This group of patients accounted for .75% of the total bed-days of care, .59% of total discharges and .15% of outpatients visits utilized by all patients in the network for all conditions.

Table 13.4

Table 13.4 compares resource utilization specifically directed at treating SCI. In other words, we examine the utilization for which the primary diagnosis (DXLSF) was a defining diagnosis for the SCI, with utilization for all conditions by all patients in each network.

For example, in VISN 22, .98% of the patients had some utilization for which the primary diagnosis was SCI. Utilization specifically directed at treating the SCI accounted for 6.57% of all bed-days of care, .91% of all discharges, and 1.06% of all outpatient visits.

Table 13.5

Table 13.5 combines the information from Tables 13.2 and 13.4, comparing utilization by the SCI primary diagnosis group specifically directed at treating their condition with utilization by this same group for all conditions. For example, in VISN 22, .98% (1,749) of the patients had some utilization for SCI. These patients accounted for 32,852 bed-days of care in FY-2000, of which 15,216 or about 46%, were utilized specifically for treating their SCI (i.e., primary diagnosis (DXLSF) of SCI). Similarly, approximately 22.43% of the discharges for patients in the SCI primary diagnosis group resulted from inpatient stays to treat their disease, and 41.46% of the outpatient visits made by these patients were for specifically for the treatment of SCI.

Costs

Cost data are reported for utilization of VA services by VA patients with SCI in Table 13.6 and Table 13.7. Veterans with SCI are identified by a SCI diagnosis for at least one inpatient or outpatient service received. We separately report for veterans who had at least one primary diagnosis of SCI and veterans whose only diagnoses of SCI are secondary to another diagnosis. Costs are for VA utilization and include inpatient, outpatient, and pharmacy services for all causes, not just for SCI-specific use. That is, we report all VA costs for all causes for individuals identified as having SCI.

There were 19,234 individuals with at least one primary or secondary diagnosis of SCI for whom cost data were available, and these costs averaged \$27,094 per veteran. Breaking these costs down by whether or not the veteran had at least one primary diagnosis of SCI, results in an average cost of \$25,786 per veteran for those with at least one primary care diagnosis of SCI and \$32,828 per veteran for those patients with only secondary diagnoses.

Focusing on those patients with at least one primary diagnosis of SCI, the \$27,094 costs per veteran are distributed as follows: 16.66% are for inpatient medical/surgical services, 57.83% are for other inpatient services, 14.09% are for outpatient services, and 11.41% are for pharmaceutical services. Across VISNs, overall costs per veteran with a primary diagnosis of SCI ranged from a low of \$10,737 (VISN 19) to a high of \$34,832 (VISN 3) per veteran.

Spinal Cord Injury

Table 13.1:
Overall Prevalence Statistics – Spinal Cord Injury, FY-2000

Veterans Integrated Service Network	Total Number of Patients	Patients with SCI		Gender (%)		Age Group (%)					Marital Status (%)		Means Test Status (%)	
		N	(%)	M	F	<45	45-54	55-64	65-74	75+	Married	Not Married	Service Connected	Low Income
New England (1)	158,204	1,090	0.69	97.61	2.39	17.89	28.62	17.71	22.02	13.76	51.74	45.96	57.52	33.12
Upstate NY (2)	100,499	435	0.43	96.78	3.22	17.01	27.59	15.86	22.30	17.24	53.56	45.75	48.74	40.23
NY/NJ (3)	166,593	750	0.45	97.73	2.27	16.93	27.73	16.80	24.00	14.53	43.47	54.27	51.07	36.80
Stars and Stripes (4)	202,472	721	0.36	96.53	3.47	16.50	27.05	19.28	22.05	14.98	44.52	53.54	51.73	41.89
Capitol (5)	88,163	360	0.41	96.11	3.89	22.22	34.72	18.06	16.94	8.06	41.39	55.83	55.56	38.33
Mid-Atlantic (6)	161,081	1,341	0.83	98.06	1.94	21.70	31.39	20.36	17.60	8.95	49.52	48.99	53.77	39.37
Atlantic (7)	201,514	1,290	0.64	97.60	2.40	24.11	31.86	17.83	17.67	8.53	46.20	52.40	46.90	46.98
Sunshine (8)	308,906	1,959	0.63	96.48	3.52	20.37	28.48	20.83	19.60	10.72	53.09	43.13	55.08	39.51
Mid-South (9)	165,501	1,197	0.72	98.33	1.67	20.97	32.58	16.96	20.63	8.86	49.96	49.12	45.95	48.29
Ohio (10)	117,463	669	0.57	97.16	2.84	27.80	30.19	17.64	14.80	9.57	40.51	58.15	52.02	43.05
Vets in Partnership (11)	142,393	649	0.46	98.61	1.39	21.57	33.74	17.72	17.26	9.71	45.45	53.78	48.07	45.61
Great Lakes (12)	142,079	1,160	0.82	98.62	1.38	19.91	31.90	19.05	19.40	9.74	44.57	54.57	45.17	45.69
Upper Midwest (13)	96,279	426	0.44	98.12	1.88	17.14	28.17	19.25	24.18	11.27	52.82	45.54	49.06	40.14
Central Plains (14)	73,699	275	0.37	96.73	3.27	16.73	35.27	20.73	18.55	8.73	46.55	52.00	44.73	46.55
Heartland (15)	148,229	833	0.56	97.84	2.16	21.49	31.81	17.53	20.29	8.88	46.46	51.74	40.58	48.74
South Central (16)	294,286	1,724	0.59	97.56	2.44	20.71	33.53	19.84	17.23	8.70	49.01	49.07	47.04	46.93
Heart of Texas (17)	151,601	1,033	0.68	95.45	4.55	19.65	31.85	20.23	17.81	10.45	52.86	45.98	59.44	36.11
Southwest (18)	154,764	868	0.56	97.12	2.88	21.66	30.99	18.43	18.20	10.71	48.50	50.69	58.53	35.83
Rocky Mt. (19)	95,866	633	0.66	93.52	6.48	29.86	32.39	16.75	13.43	7.58	49.13	49.92	59.40	35.23
Northwest (20)	143,215	1,172	0.82	96.67	3.33	20.48	35.58	20.65	14.59	8.70	46.93	51.28	53.33	39.68
Sierra Pacific (21)	149,020	1,038	0.70	97.30	2.70	19.27	30.06	18.02	19.17	13.49	46.72	51.93	52.22	37.09
Desert Pacific (22)	178,204	1,926	1.08	96.83	3.17	18.38	27.26	19.83	20.92	13.60	45.74	52.02	56.85	36.09
National	3,314,672	19,238	0.58	97.25	2.75	19.75	30.47	18.94	19.54	11.30	48.64	49.62	51.23	41.19

Table 13.2:
Overall Resource Utilization – Spinal Cord Injury (Primary Diagnosis Group) Compared to All Users, FY-2000

Veterans Integrated Service Network (VISN)	Total Patients	Total Patients SCI		Bed Days of Care			Discharges			Outpatient Visits		
				Total	SCI		Total	SCI		Total	SCI	
	N	N	%	N	N	%	N	N	%	N	N	%
New England (1)	158,204	755	0.48	303,134	14,189	4.68	24,413	470	1.93	1,990,550	13,626	0.68
Upstate NY (2)	100,499	295	0.29	120,203	1,110	0.92	11,871	101	0.85	1,093,796	6,665	0.61
NY/NJ (3)	166,593	557	0.33	405,186	18,217	4.50	24,128	403	1.67	1,854,064	13,175	0.71
Stars and Stripes (4)	202,472	555	0.27	284,688	2,952	1.04	24,122	207	0.86	1,846,937	11,158	0.60
Capitol (5)	88,163	272	0.31	222,405	2,306	1.04	17,107	111	0.65	1,007,572	4,987	0.49
Mid-Atlantic (6)	161,081	1,132	0.70	361,832	38,021	10.51	31,256	708	2.27	1,491,680	16,301	1.09
Atlantic (7)	201,514	1,084	0.54	369,514	15,913	4.31	29,275	480	1.64	1,891,761	16,459	0.87
Sunshine (8)	308,906	1,716	0.56	392,501	28,217	7.19	41,850	1,049	2.51	3,109,217	35,393	1.14
Mid-South (9)	165,501	967	0.58	316,108	15,572	4.93	34,579	665	1.92	1,483,519	14,631	0.99
Ohio (10)	117,463	577	0.49	191,574	10,073	5.26	18,945	401	2.12	1,327,847	10,586	0.80
Vets in Partnership (11)	142,393	520	0.37	311,786	2,860	0.92	23,779	231	0.97	1,368,643	10,254	0.75
Great Lakes (12)	142,079	977	0.69	334,130	22,030	6.59	30,157	743	2.46	1,715,017	19,852	1.16
Upper Midwest (13)	96,279	307	0.32	107,644	1,086	1.01	16,092	147	0.91	934,533	5,746	0.61
Central Plains (14)	73,699	212	0.29	76,697	697	0.91	9,898	68	0.69	674,604	3,021	0.45
Heartland (15)	148,229	667	0.45	211,861	10,767	5.08	25,568	327	1.28	1,458,394	9,627	0.66
South Central (16)	294,286	1,484	0.50	454,315	16,762	3.69	47,751	787	1.65	2,750,358	24,164	0.88
Heart of Texas (17)	151,601	905	0.60	297,463	15,476	5.20	25,932	636	2.45	1,544,273	18,484	1.20
Southwest (18)	154,764	747	0.48	167,362	7,214	4.31	23,822	414	1.74	1,574,259	13,133	0.83
Rocky Mt. (19)	95,866	535	0.56	132,102	2,207	1.67	15,065	184	1.22	959,415	8,375	0.87
Northwest (20)	143,215	842	0.59	181,076	10,698	5.91	24,296	629	2.59	1,488,150	13,318	0.89
Sierra Pacific (21)	149,020	858	0.58	214,370	12,774	5.96	19,163	469	2.45	1,630,530	14,339	0.88
Desert Pacific (22)	178,204	1,749	0.98	231,584	32,852	14.19	25,132	1,021	4.06	2,119,773	54,443	2.57
National	3,314,672	15,662	0.47	5,687,535	281,993	4.96	544,201	10,251	1.88	35,314,892	337,737	0.96

Table 13.3:
Overall Resource Utilization – Spinal Cord Injury (Secondary Diagnosis Group) Compared to All Users, FY-2000

Veterans Integrated Service Network (VISN)	Total Patients	Total Patients SCI		Bed Days of Care			Discharges			Outpatient Visits		
	N	N	%	Total	SCI		Total	SCI		Total	SCI	
				N	N	%	N	N	%	N	N	%
New England (1)	158,204	335	0.21	303,134	4,536	1.50	24,413	346	1.42	1,990,550	6,042	0.30
Upstate NY (2)	100,499	140	0.14	120,203	1,490	1.24	11,871	113	0.95	1,093,796	3,033	0.28
NY/NJ (3)	166,593	193	0.12	405,186	5,438	1.34	24,128	172	0.71	1,854,064	3,391	0.18
Stars and Stripes (4)	202,472	166	0.08	284,688	2,101	0.74	24,122	143	0.59	1,846,937	2,862	0.15
Capitol (5)	88,163	88	0.10	222,405	2,432	1.09	17,107	84	0.49	1,007,572	1,657	0.16
Mid-Atlantic (6)	161,081	209	0.13	361,832	5,487	1.52	31,256	189	0.60	1,491,680	2,148	0.14
Atlantic (7)	201,514	206	0.10	369,514	4,305	1.17	29,275	187	0.64	1,891,761	2,881	0.15
Sunshine (8)	308,906	243	0.08	392,501	4,320	1.10	41,850	180	0.43	3,109,217	3,924	0.13
Mid-South (9)	165,501	230	0.14	316,108	7,745	2.45	34,579	241	0.70	1,483,519	2,489	0.17
Ohio (10)	117,463	92	0.08	191,574	1,849	0.97	18,945	78	0.41	1,327,847	1,652	0.12
Vets in Partnership (11)	142,393	129	0.09	311,786	1,410	0.45	23,779	106	0.45	1,368,643	1,705	0.12
Great Lakes (12)	142,079	183	0.13	334,130	3,111	0.93	30,157	173	0.57	1,715,017	2,572	0.15
Upper Midwest (13)	96,279	119	0.12	107,644	1,053	0.98	16,092	111	0.69	934,533	1,858	0.20
Central Plains (14)	73,699	63	0.09	76,697	829	1.08	9,898	59	0.60	674,604	1,020	0.15
Heartland (15)	148,229	166	0.11	211,861	1,025	0.48	25,568	83	0.32	1,458,394	1,725	0.12
South Central (16)	294,286	240	0.08	454,315	4,295	0.95	47,751	193	0.40	2,750,358	3,258	0.12
Heart of Texas (17)	151,601	128	0.08	297,463	2,518	0.85	25,932	95	0.37	1,544,273	1,816	0.12
Southwest (18)	154,764	121	0.08	167,362	784	0.47	23,822	85	0.36	1,574,259	2,398	0.15
Rocky Mt. (19)	95,866	98	0.10	132,102	789	0.60	15,065	73	0.48	959,415	1,266	0.13
Northwest (20)	143,215	330	0.23	181,076	3,735	2.06	24,296	296	1.22	1,488,150	4,976	0.33
Sierra Pacific (21)	149,020	180	0.12	214,370	1,589	0.74	19,163	95	0.50	1,630,530	3,008	0.18
Desert Pacific (22)	178,204	177	0.10	231,584	1,741	0.75	25,132	148	0.59	2,119,773	3,232	0.15
National	3,314,672	3,576	0.11	5,687,535	62,582	1.10	544,201	3,250	0.60	35,314,892	58,913	0.17

Table 13.4:
Resource Utilization for Treatment of Spinal Cord Injury (Primary Diagnosis Group) Compared to Overall Resource Utilization
by All Users, FY-2000

Veterans Integrated Service Network (VISN)	Total Patients	Total Patients SCI		Bed Days of Care			Discharges			Outpatient Visits		
	N	N	%	Total N	SCI N	%	Total N	N	%	Total N	N	%
New England (1)	158,204	755	0.48	303,134	8,300	2.74	24,413	61	0.25	1,990,550	2,206	0.11
Upstate NY (2)	100,499	295	0.29	120,203	11	0.01	11,871	6	0.05	1,093,796	928	0.08
NY/NJ (3)	166,593	557	0.33	405,186	3,611	0.89	24,128	48	0.20	1,854,064	3,149	0.17
Stars and Stripes (4)	202,472	555	0.27	284,688	152	0.05	24,122	8	0.03	1,846,937	1,950	0.11
Capitol (5)	88,163	272	0.31	222,405	140	0.06	17,107	13	0.08	1,007,572	932	0.09
Mid-Atlantic (6)	161,081	1,132	0.70	361,832	20,997	5.80	31,256	36	0.12	1,491,680	3,871	0.26
Atlantic (7)	201,514	1,084	0.54	369,514	1,185	0.32	29,275	25	0.09	1,891,761	5,184	0.27
Sunshine (8)	308,906	1,716	0.56	392,501	3,767	0.96	41,850	78	0.19	3,109,217	11,684	0.38
Mid-South (9)	165,501	967	0.58	316,108	913	0.29	34,579	37	0.11	1,483,519	3,173	0.21
Ohio (10)	117,463	577	0.49	191,574	4,261	2.22	18,945	155	0.82	1,327,847	3,385	0.25
Vets in Partnership (11)	142,393	520	0.37	311,786	135	0.04	23,779	18	0.08	1,368,643	2,119	0.15
Great Lakes (12)	142,079	977	0.69	334,130	2,712	0.81	30,157	69	0.23	1,715,017	9,140	0.53
Upper Midwest (13)	96,279	307	0.32	107,644	28	0.03	16,092	5	0.03	934,533	614	0.07
Central Plains (14)	73,699	212	0.29	76,697	43	0.06	9,898	3	0.03	674,604	560	0.08
Heartland (15)	148,229	667	0.45	211,861	7,920	3.74	25,568	109	0.43	1,458,394	2,826	0.19
South Central (16)	294,286	1,484	0.50	454,315	388	0.09	47,751	81	0.17	2,750,358	6,774	0.25
Heart of Texas (17)	151,601	905	0.60	297,463	1,246	0.42	25,932	51	0.20	1,544,273	5,559	0.36
Southwest (18)	154,764	747	0.48	167,362	1,700	1.02	23,822	119	0.50	1,574,259	3,932	0.25
Rocky Mt. (19)	95,866	535	0.56	132,102	121	0.09	15,065	11	0.07	959,415	1,199	0.12
Northwest (20)	143,215	842	0.59	181,076	2,774	1.53	24,296	101	0.42	1,488,150	2,733	0.18
Sierra Pacific (21)	149,020	858	0.58	214,370	6,140	2.86	19,163	145	0.76	1,630,530	3,197	0.20
Desert Pacific (22)	178,204	1,749	0.98	231,584	15,216	6.57	25,132	229	0.91	2,119,773	22,572	1.06
National	3,314,672	15,662	0.47	5,687,535	81,760	1.44	544,201	1,408	0.26	35,314,892	97,687	0.28

Table 13.5:
Resource Utilization for Treatment of Spinal Cord Injury Compared to Overall Utilization by the Spinal Cord Injury Cohort (Primary Diagnosis Group), FY-2000

Veterans Integrated Service Network (VISN)	Total Patients	Total Patients SCI		Bed Days of Care			Discharges			Outpatient Visits		
				Total	SCI		Total	SCI		Total	SCI	
	N	N	%	N	N	%	N	N	%	N	N	%
New England (1)	158,204	755	0.48	14,189	8,300	58.50	470	61	12.98	13,626	2,206	16.19
Upstate NY (2)	100,499	295	0.29	1,110	11	0.99	101	6	5.94	6,665	928	13.92
NY/NJ (3)	166,593	557	0.33	18,217	3,611	19.82	403	48	11.91	13,175	3,149	23.90
Stars and Stripes (4)	202,472	555	0.27	2,952	152	5.15	207	8	3.86	11,158	1,950	17.48
Capitol (5)	88,163	272	0.31	2,306	140	6.07	111	13	11.71	4,987	932	18.69
Mid-Atlantic (6)	161,081	1,132	0.70	38,021	20,997	55.22	708	36	5.08	16,301	3,871	23.75
Atlantic (7)	201,514	1,084	0.54	15,913	1,185	7.45	480	25	5.21	16,459	5,184	31.50
Sunshine (8)	308,906	1,716	0.56	28,217	3,767	13.35	1,049	78	7.44	35,393	11,684	33.01
Mid-South (9)	165,501	967	0.58	15,572	913	5.86	665	37	5.56	14,631	3,173	21.69
Ohio (10)	117,463	577	0.49	10,073	4,261	42.30	401	155	38.65	10,586	3,385	31.98
Vets in Partnership (11)	142,393	520	0.37	2,860	135	4.72	231	18	7.79	10,254	2,119	20.67
Great Lakes (12)	142,079	977	0.69	22,030	2,712	12.31	743	69	9.29	19,852	9,140	46.04
Upper Midwest (13)	96,279	307	0.32	1,086	28	2.58	147	5	3.40	5,746	614	10.69
Central Plains (14)	73,699	212	0.29	697	43	6.17	68	3	4.41	3,021	560	18.54
Heartland (15)	148,229	667	0.45	10,767	7,920	73.56	327	109	33.33	9,627	2,826	29.35
South Central (16)	294,286	1,484	0.50	16,762	388	2.31	787	81	10.29	24,164	6,774	28.03
Heart of Texas (17)	151,601	905	0.60	15,476	1,246	8.05	636	51	8.02	18,484	5,559	30.07
Southwest (18)	154,764	747	0.48	7,214	1,700	23.57	414	119	28.74	13,133	3,932	29.94
Rocky Mt. (19)	95,866	535	0.56	2,207	121	5.48	184	11	5.98	8,375	1,199	14.32
Northwest (20)	143,215	842	0.59	10,698	2,774	25.93	629	101	16.06	13,318	2,733	20.52
Sierra Pacific (21)	149,020	858	0.58	12,774	6,140	48.07	469	145	30.92	14,339	3,197	22.30
Desert Pacific (22)	178,204	1,749	0.98	32,852	15,216	46.32	1,021	229	22.43	54,443	22,572	41.46
National	3,314,672	15,662	0.47	281,993	81,760	28.99	10,251	1,408	13.74	337,737	97,687	28.92

**Table 13.6:
FY-2000 Cost of SCI (Primary Diagnosis)**

Veterans Integrated Service Network	No. of Patients	Outpatient		Inpatient Med/Surg		Inpatient Other		Pharmacy		Total
		\$	%	\$	%	\$	%	\$	%	\$
New England (1)	762	2,601,214	16.20%	2,228,775	13.88%	9,576,326	59.63%	1,653,093	10.29%	16,059,408
Upstate NY (2)	299	1,108,766	25.38%	1,022,921	23.41%	1,499,008	34.31%	738,273	16.90%	4,368,968
NY/NJ (3)	563	2,845,443	14.51%	2,005,876	10.23%	13,583,227	69.27%	1,175,852	6.00%	19,610,399
Stars and Stripes (4)	560	1,588,537	18.53%	2,904,984	33.89%	2,845,378	33.20%	1,232,707	14.38%	8,571,605
Capitol (5)	272	850,497	17.64%	1,567,783	32.51%	2,050,919	42.53%	352,687	7.31%	4,821,886
Mid-Atlantic (6)	1,145	2,366,668	7.51%	3,322,800	10.54%	24,159,186	76.62%	1,682,632	5.34%	31,531,285
Atlantic (7)	1,096	4,816,653	19.62%	3,959,862	16.13%	12,608,191	51.37%	3,159,982	12.87%	24,544,687
Sunshine (8)	1,730	6,213,566	15.89%	4,583,655	11.72%	23,837,261	60.96%	4,471,683	11.43%	39,106,165
Mid-South (9)	980	2,332,588	12.54%	3,287,877	17.68%	11,094,149	59.65%	1,884,674	10.13%	18,599,287
Ohio (10)	585	1,632,560	11.64%	1,554,343	11.08%	10,118,435	72.12%	724,222	5.16%	14,029,560
Vets in Partnership (11)	523	1,844,452	20.36%	2,826,537	31.20%	2,202,030	24.31%	2,184,989	24.12%	9,058,008
Great Lakes (12)	984	3,359,157	11.08%	4,565,234	15.06%	20,202,707	66.66%	2,182,079	7.20%	30,309,177
Upper Midwest (13)	315	855,418	19.94%	1,610,046	37.53%	1,338,731	31.21%	485,698	11.32%	4,289,894
Central Plains (14)	216	409,218	13.20%	894,302	28.84%	431,512	13.91%	1,366,213	44.05%	3,101,246
Heartland (15)	683	1,311,438	10.69%	2,934,856	23.93%	6,336,106	51.66%	1,682,785	13.72%	12,265,184
South Central (16)	1,492	4,949,889	18.54%	5,049,994	18.92%	11,852,381	44.40%	4,844,659	18.15%	26,696,923
Heart of Texas (17)	911	2,278,750	10.70%	3,019,076	14.17%	13,263,004	62.26%	2,740,615	12.87%	21,301,445
Southwest (18)	771	1,745,049	12.71%	2,798,009	20.38%	7,211,144	52.53%	1,973,573	14.38%	13,727,774
Rocky Mt. (19)	559	1,107,348	18.45%	1,324,432	22.07%	2,234,574	37.23%	1,335,660	22.25%	6,002,014
Northwest (20)	848	1,810,878	10.33%	3,236,249	18.46%	10,908,763	62.22%	1,576,425	8.99%	17,532,314
Sierra Pacific (21)	864	2,552,307	10.20%	3,297,115	13.18%	17,741,176	70.91%	1,427,733	5.71%	25,018,331
Desert Pacific (22)	1,761	8,327,573	15.62%	9,295,571	17.44%	28,476,143	53.41%	7,212,737	13.53%	53,312,024
National	15662	56,907,967	14.09%	67,290,297	16.66%	233,570,349	57.83%	46,088,970	11.41%	403,857,583

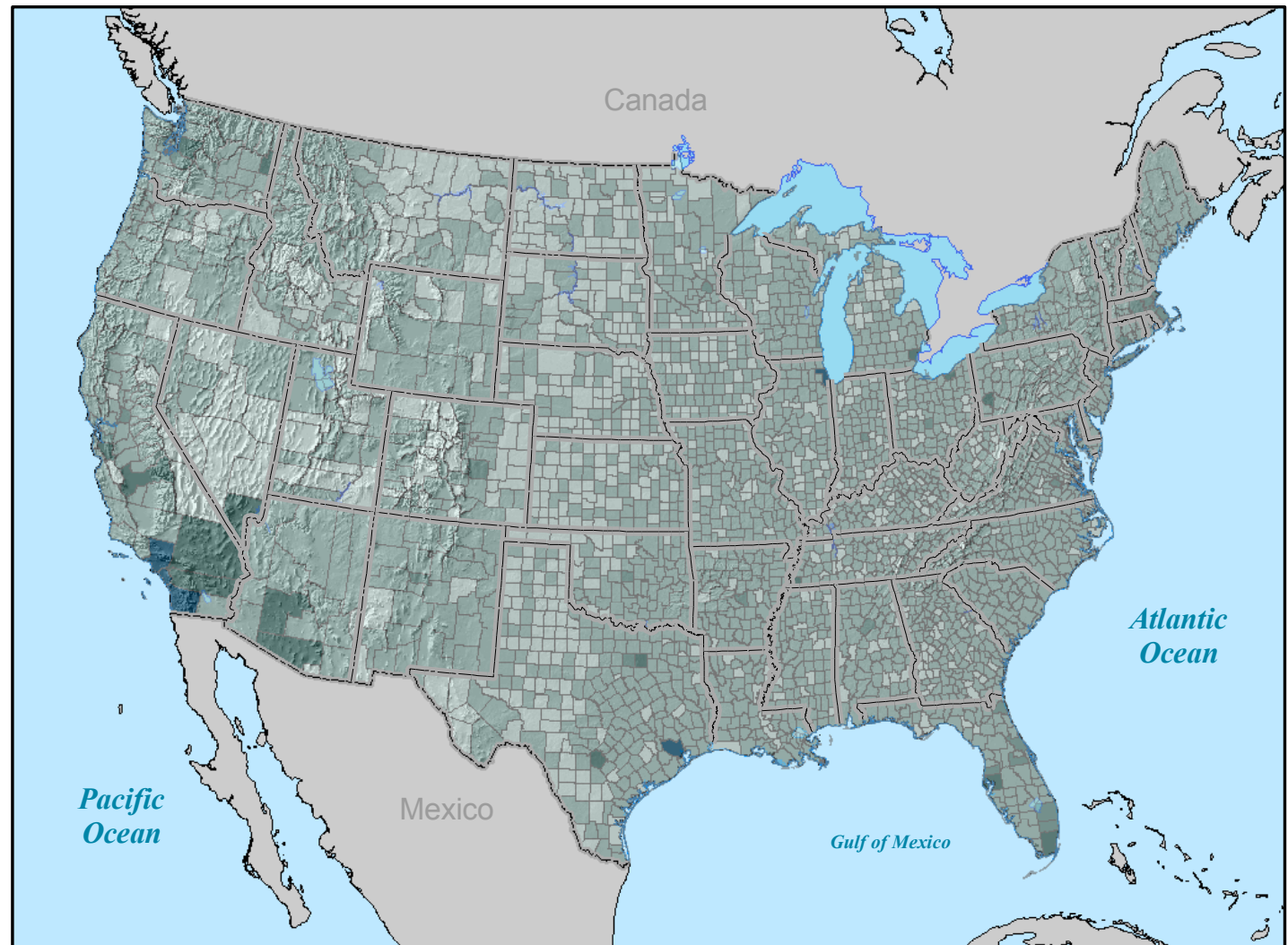
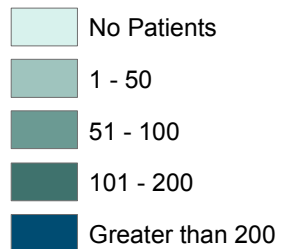
**Table 13.7:
FY-2000 Cost of SCI (Secondary Diagnosis)**

Veterans Integrated Service Network	No. of Patients	Outpatient		Inpatient Med/Surg		Inpatient Other		Pharmacy		Total
		\$	%	\$	%	\$	%	\$	%	\$
New England (1)	336	1,149,799	11.54%	3,239,305	32.52%	4,859,775	48.79%	712,650	7.15%	9,961,529
Upstate NY (2)	141	661,765	17.78%	1,922,376	51.65%	832,431	22.37%	305,342	8.20%	3,721,914
NY/NJ (3)	196	802,223	7.98%	4,049,009	40.27%	4,967,021	49.40%	236,746	2.35%	10,054,999
Stars and Stripes (4)	166	447,739	7.58%	2,029,213	34.36%	3,034,086	51.38%	393,962	6.67%	5,905,000
Capitol (5)	90	320,438	8.61%	1,427,652	38.37%	1,886,010	50.69%	86,909	2.34%	3,721,009
Mid-Atlantic (6)	209	336,943	4.56%	1,955,315	26.48%	4,821,139	65.29%	270,285	3.66%	7,383,682
Atlantic (7)	212	541,705	8.47%	2,385,545	37.32%	3,070,610	48.04%	394,139	6.17%	6,391,999
Sunshine (8)	246	743,217	10.54%	2,425,570	34.38%	3,500,756	49.62%	385,191	5.46%	7,054,733
Mid-South (9)	232	430,178	5.23%	1,971,877	23.98%	5,353,327	65.09%	468,747	5.70%	8,224,129
Ohio (10)	94	265,638	7.62%	1,228,524	35.24%	1,874,368	53.76%	117,722	3.38%	3,486,253
Vets in Partnership (11)	130	390,004	10.09%	1,503,798	38.90%	1,605,999	41.55%	365,826	9.46%	3,865,626
Great Lakes (12)	185	490,290	8.07%	1,642,792	27.05%	3,481,078	57.32%	458,433	7.55%	6,072,593
Upper Midwest (13)	120	280,315	9.70%	1,404,243	48.59%	1,041,554	36.04%	163,803	5.67%	2,889,915
Central Plains (14)	63	155,292	8.70%	905,026	50.69%	642,516	35.99%	82,605	4.63%	1,785,439
Heartland (15)	169	245,515	9.08%	1,194,217	44.18%	630,450	23.32%	632,795	23.41%	2,702,977
South Central (16)	239	568,895	9.36%	2,720,660	44.75%	2,402,408	39.51%	387,948	6.38%	6,079,912
Heart of Texas (17)	128	261,616	7.60%	863,237	25.09%	2,096,242	60.92%	219,731	6.39%	3,440,826
Southwest (18)	122	374,971	14.19%	854,385	32.32%	1,141,579	43.19%	272,435	10.31%	2,643,370
Rocky Mt. (19)	99	191,865	8.66%	1,033,603	46.67%	824,287	37.22%	164,934	7.45%	2,214,688
Northwest (20)	331	821,585	10.22%	2,887,981	35.91%	3,768,845	46.86%	564,099	7.01%	8,042,511
Sierra Pacific (21)	185	593,524	11.26%	1,477,674	28.02%	2,910,490	55.19%	291,706	5.53%	5,273,394
Desert Pacific (22)	180	568,408	8.96%	3,036,120	47.84%	2,398,839	37.80%	343,040	5.41%	6,346,406
National	3572	10,641,926	9.08%	42,158,122	35.95%	57,143,808	48.73%	7,319,048	6.24%	117,262,905

Map 13.1



Number of Patients



Number of VA Patients with Spinal Cord Injury by County FY-2000

VA Health Care Atlas
HSR&D SDR 01-175

Source: VA Medical SAS Databases, FY-00

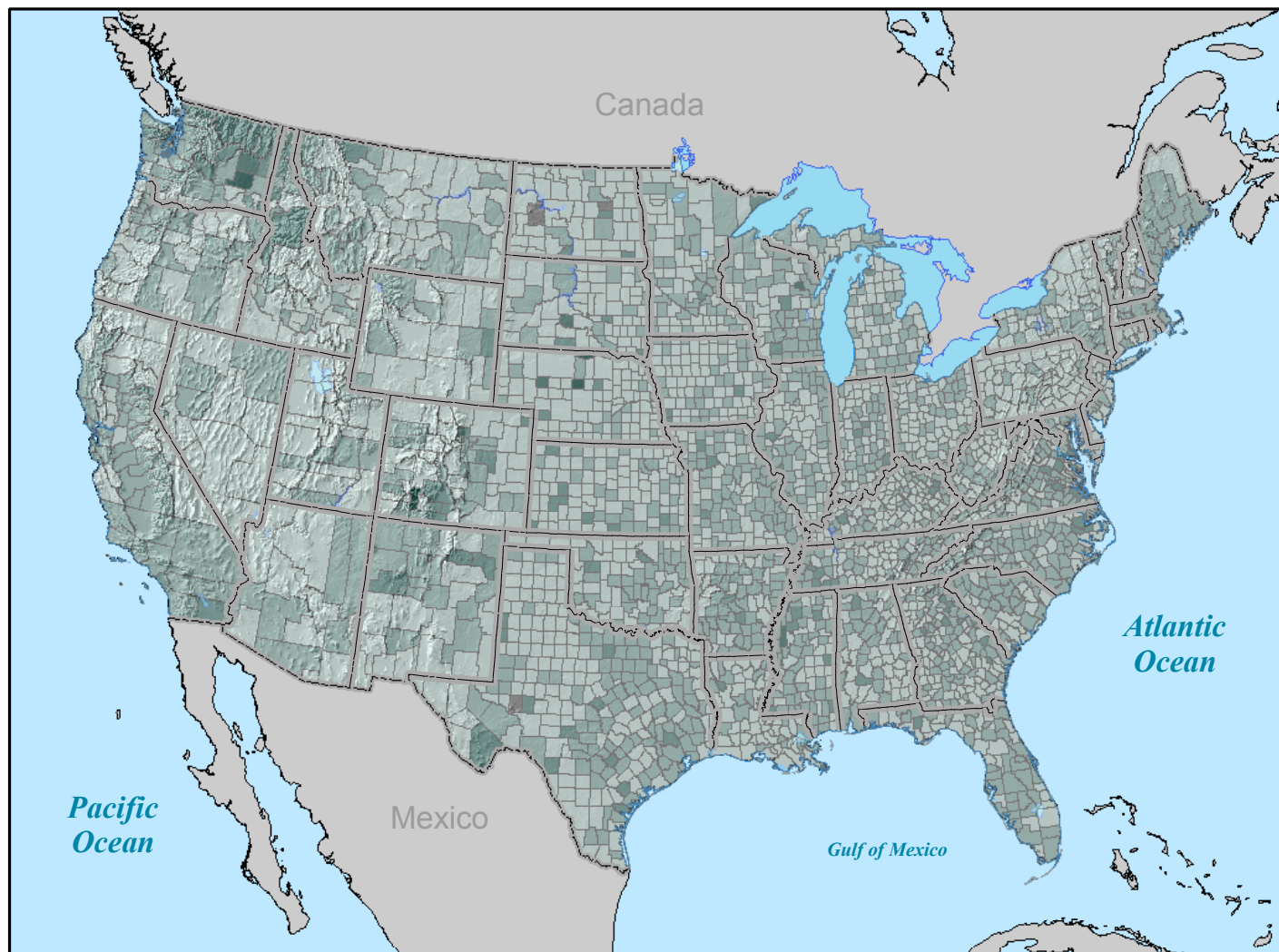
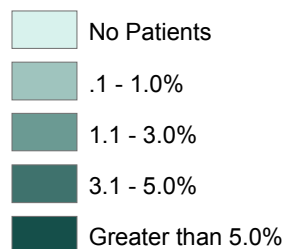
Created in ArcGIS 8 using ArcMap

Spinal Cord Injury

Map 13.2



Percent of Patients

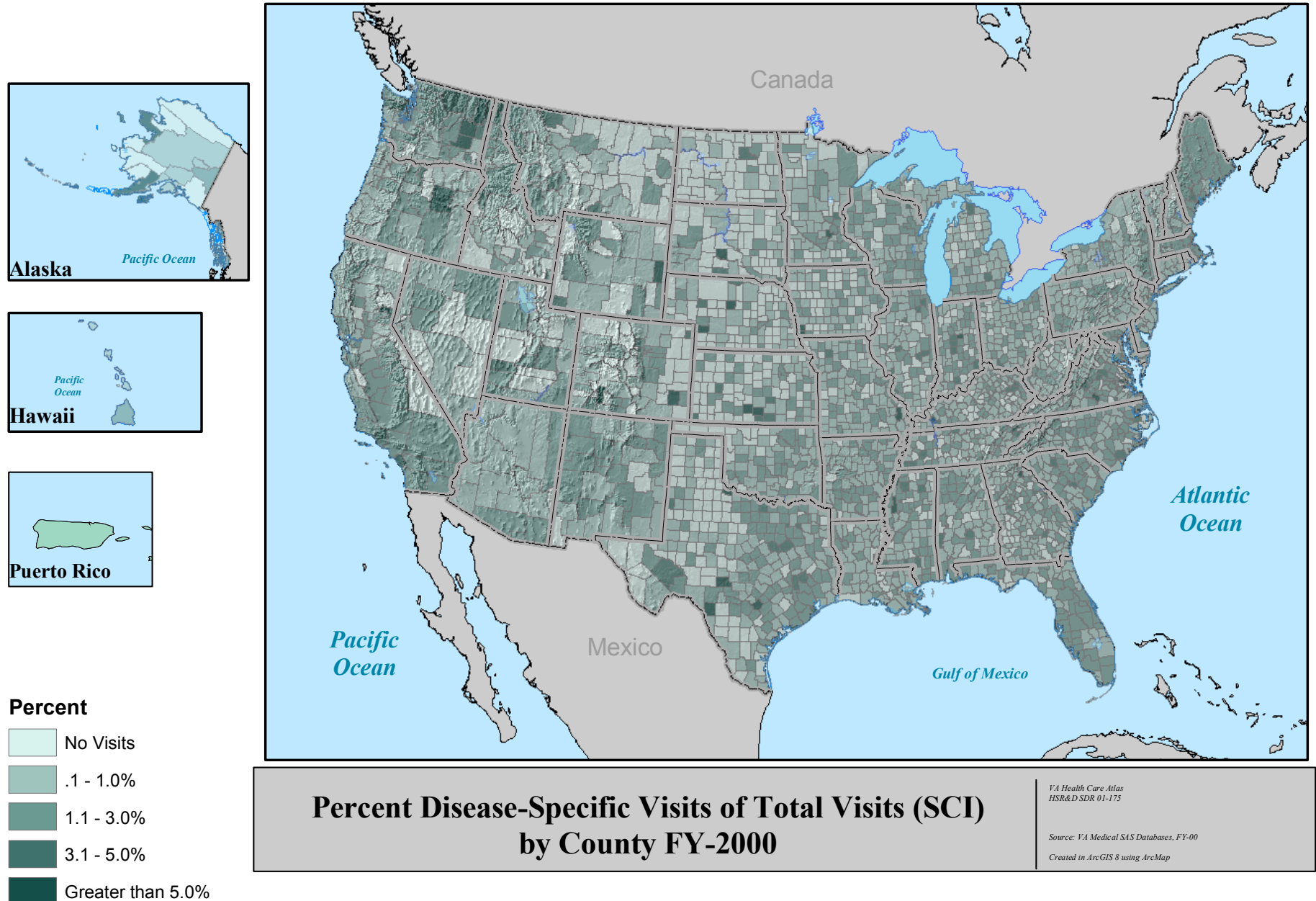


Percent of VA Patients with Spinal Cord Injury by County FY-2000

VA Health Care Atlas
HSRAD SDR 01-175

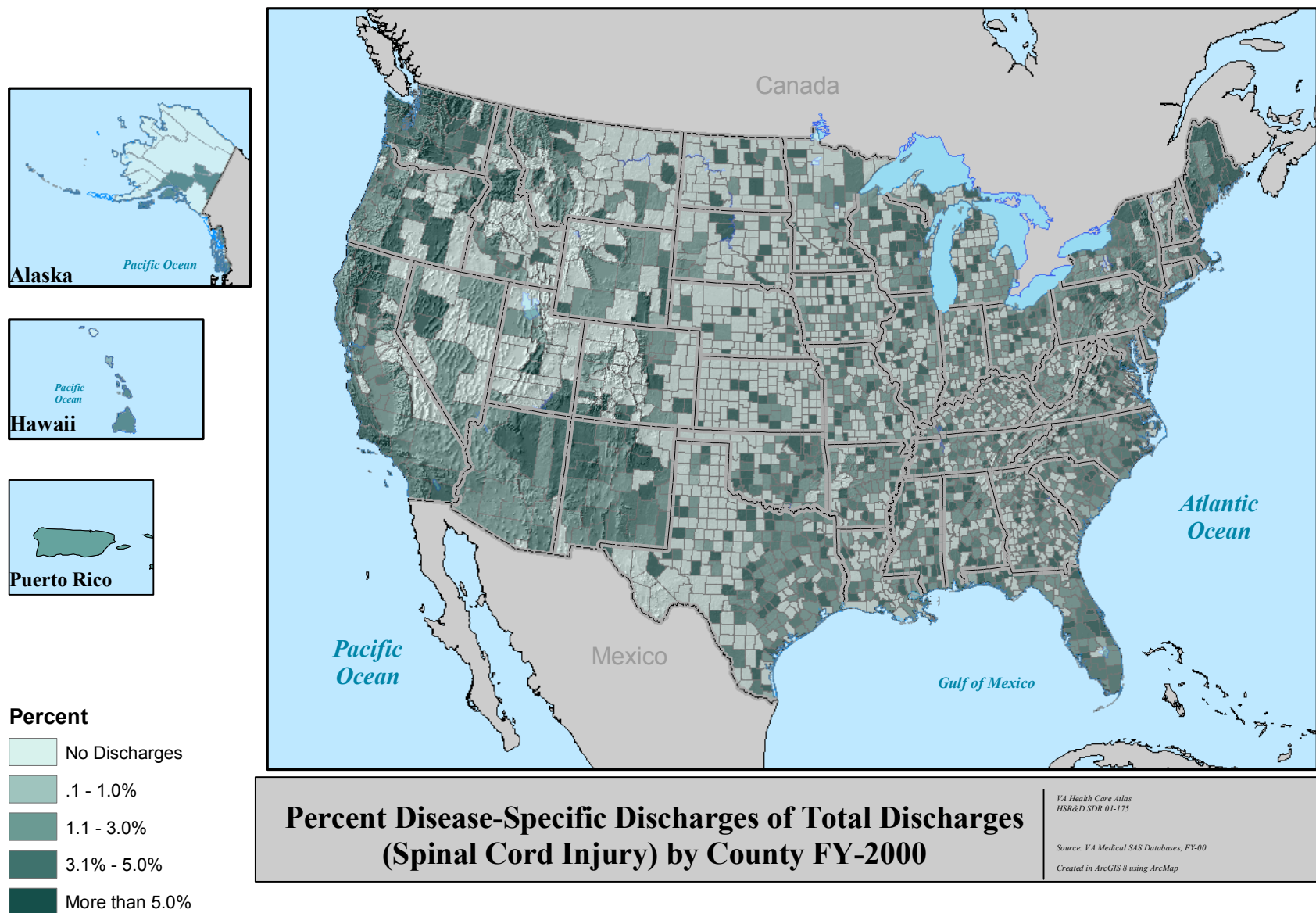
Source: VA Medical SAS Databases, FY-00
Created in ArcGIS 8 using ArcMap

Map 13.3

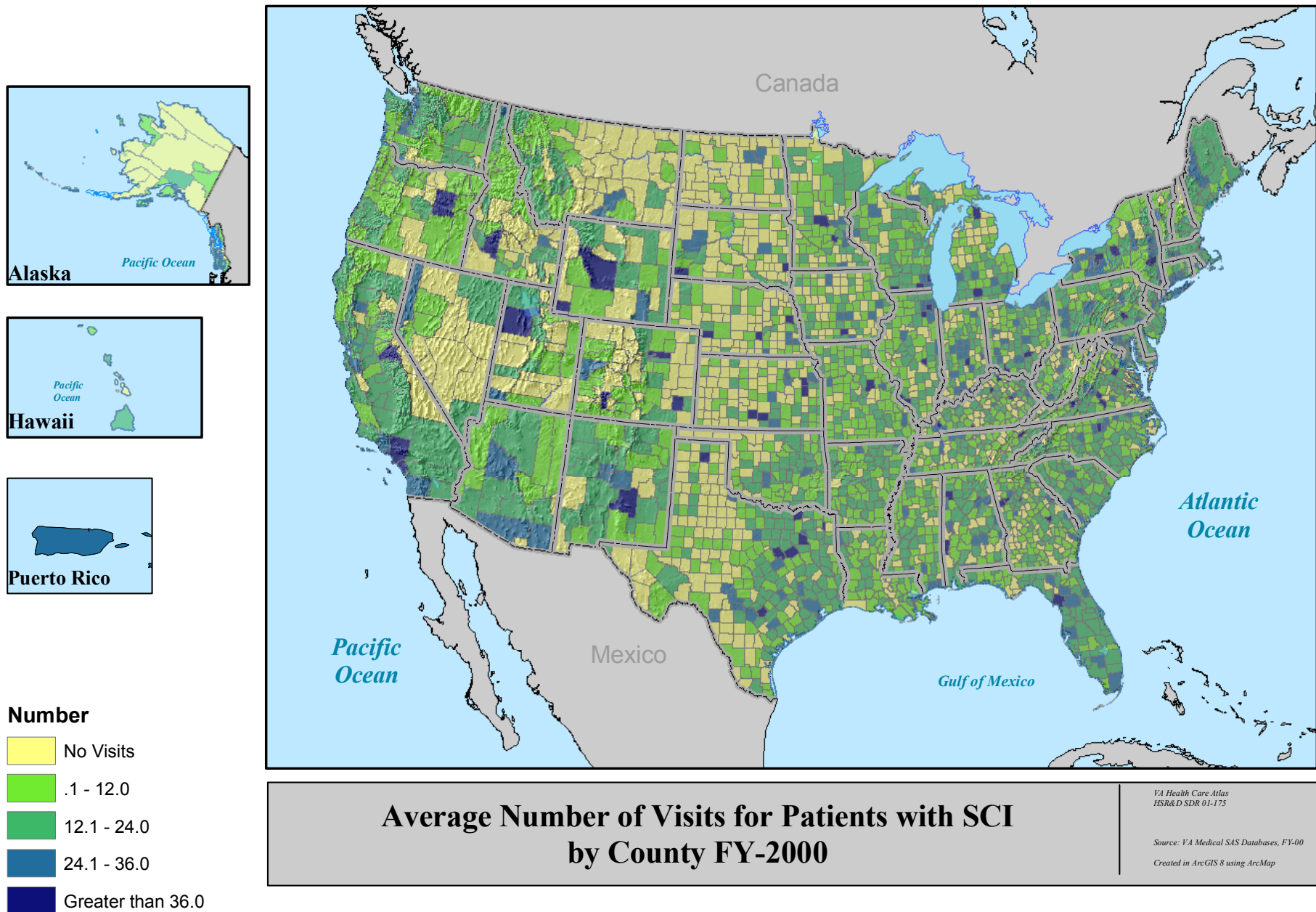


Spinal Cord Injury

Map 13.4

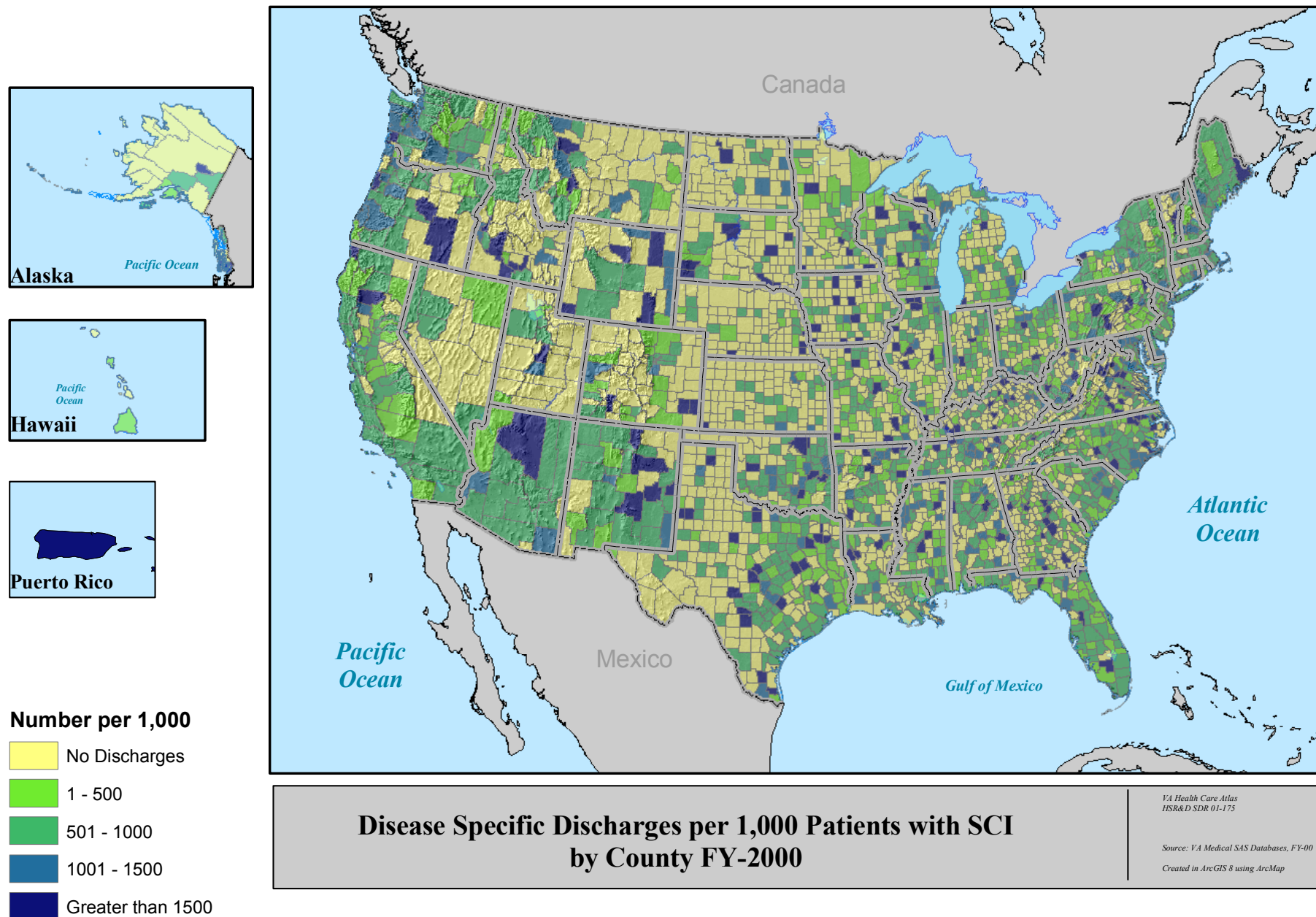


Map 13.5



Spinal Cord Injury

Map 13.6



For More Information

There are between 183,000 and 230,000 people with spinal cord injury (SCI) in the United States and about 2% of them are veterans. Each year 11,000 new cases of SCI afflict people at an average age of 32 years old, thus most SCI patients require long-term specialized care. The estimated lifetime costs for a 25 year old with a high-level injury that results in quadriplegia, for example, is over \$2.1 million (NSCISC, May 20011). Given the high economic and human costs of SCI, these cases are a major focus of VA care and research. The Spinal Cord Injury Quality Enhancement Research Initiative (SCI QUERI) was created to employ the QUERI process (see back page) to identify and address gaps in current knowledge about SCI treatment and to use evidence-based findings to develop guidelines that improve the quality of care for veterans with spinal cord injury.

SCI QUERI is located at the HSR&D Center of Excellence in Hines, Illinois and is co-chaired by Frances M. Weaver, PhD, (Research Coordinator), Barry Goldstein, MD (Co-Clinical Coordinator) and Margaret Hammond, MD. Researchers or other interested parties are encouraged to contact the SCI QUERI Coordinator to learn more about VHA's current research foci and ongoing projects in the area of Spinal Cord Injury:

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A summary of SCI QUERI activities is provided below. These descriptions were extracted from the Fact Sheets available on the Web site: <http://www.hsr.d.research.va.gov/queri.cfm>.

Research Focus and Translation Activities

Since its inception in 1998, SCI QUERI has focused on building an infrastructure to support SCI research, dissemination, and translation efforts. During this time, they have identified several important findings in the literature that are ready to be translated to “front-line” clinicians who treat veterans with spinal cord injury. Areas of particular emphasis include secondary medical complications: respiratory impairments, pressure ulcers, and urinary tract infections (UTI).² In addition, research on the implementation of Clinical Practice Guidelines (CPGs) for SCI is underway, and evaluation of patient outcomes following CPG implementation is in progress.

For the past year, SCI QUERI has focused its translation efforts on the improvement of influenza vaccination rates to prevent influenza and related respiratory infections in persons with SCI. Respiratory disease is now the leading cause of mortality in the SCI population after the first year of injury.³ In earlier work, DeVivo and colleagues reported that persons with SCI who contracted influenza or pneumonia have a 37% higher likelihood of death.⁴ Thus, vaccination to prevent influenza and its complications is critical in this high-risk population. Although the Centers for Disease Control and Prevention (CDC) and literature about influenza have not specifically identified SCI as a high-risk group for complications from influenza, recent data suggests that influenza vaccination could have a positive impact on SCI patient morbidity and mortality. Data from VHA, using the External Peer Review Program (EPRP) methodology, indicate that national influenza vaccination rates for SCI veterans between 1996 and 2001 have been improving but remain low. Although under-reporting may account for these low vaccination rates, in part, there is significant room for improvement. SCI QUERI investigators identified barriers and facilitators to

providing influenza vaccination in the VA SCI health care system and the SCI population and incorporated these findings into a multi-pronged pilot project at four SCI Centers. The intervention included patient and clinician mailed reminders and educational materials, as well as the use of local clinical champions to support vaccination efforts. Important findings of this project included: 1) self-reported vaccination rates in the pilot sites were significantly higher than in comparison sites, indicating that this modest intervention was effective; 2) younger patients and some minority groups had significantly lower vaccination rates, suggesting that these subgroups need special attention; and 3) chart review data indicated lower vaccination rates than self-reported rates, suggesting documentation issues exist. The results of this project have been used to develop a new project. A national roll-out involving all 23 VA SCI Centers for both influenza and pneumococcal vaccinations is in process. This effort will include the use of system changes including standing orders and computerized clinical reminders.

Here are a few of the important areas of SCI QUERI research:

- *Integrating clinical practice guidelines:* The study “A Process and Outcome Evaluation of Spinal Cord Clinical Practice Guidelines” was recently completed and conclusions based on the study were used to brief the Steering Committee of the SCI Medicine Consortium regarding new CPG development. Suggestions included continuing to use consumer guides and using tool kits to help implement guidelines.

- *Pressure Ulcers:* SCI QUERI staff have been involved in the development of two HSR&D IIRs focused on pressure ulcers, a major problem in individuals with SCI. One proposed study will

target those persons with SCI who are hospitalized for treatment of a severe (Stage III or IV) pressure ulcer. The five-site study was designed to examine the impact of a standardized education and structured follow-up program on recurrence rates and time to recurrence. Another study in development will focus on implementing four recommendations from the Pressure Ulcer Prevention and Treatment CPG (CSCM, 2000). It is expected that this project will also involve multiple sites.

- *Respiratory complications:* SCI QUERI is focusing efforts on respiratory complications. Topics of importance in respiratory care include pulmonary management, impaired cough, clearing secretions, sleep apnea, and prevention of secondary complications.

References

- 1 National Spinal Cord Injury Statistical Center, Birmingham, Alabama, “Spinal Cord Injury: Facts and Figures at a Glance”, May 2001.
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